

ABSTRACT

A system for characterizing a chemical mechanical polishing process is provided. The system includes a wafer that has a metal, polysilicon, and/or dielectric layer and/or substrate and electrical resistance member(s) and/or electrical resistance entities located in and/or on the metal, polysilicon and/or dielectric layer and/or substrate. The system also includes a electrical resistance monitoring system that can read the wafer electrical resistance(s) from the electrical resistance member(s) and/or electrical resistance entities and that can determine wafer stress(es) based upon the electrical resistance(s) to characterize the chemical mechanical polishing process.

Such characterization includes producing information concerning relationships between wafer electrical resistance(s) and polishing rate, polishing uniformity and introduction of defects during polishing. Such relationships are correlated with wafer electrical resistance(s) (e.g., wafer stress(es)) as related to parameters like polishing time, pressure, speed, slurry properties and wafer/metal layer properties.